

SUNSHINE PRECIOUS METALS, INC.- BIG CREEK #1 (PWS 1400050) SOURCE WATER ASSESSMENT REPORT

November 29, 2000



State of Idaho Department of Environmental Quality

Disclaimer: This publication has been developed as part of an informational service for the source water assessments of public water systems in Idaho and is based on data available at the time and the professional judgement of the staff. Although reasonable efforts have been made to present accurate information, no guarantees, including expressed or implied warranties of any kind, are made with respect to this publication by the State of Idaho or any of its agencies, employees, or agents, who also assume no legal responsibility for the accuracy of presentations, comments, or other information in this publication. The assessment is subject to modification if new data is produced.

Executive Summary

Under the Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency to assess every source of public drinking water for its relative sensitivity to contaminants regulated by the Act. This assessment is based on a land use inventory of the designated assessment area and sensitivity factors associated with the watershed characteristics.

This report, *Source Water Assessment for Sunshine Precious Metals, Inc.- Big Creek #1 (1400050)*, describes the public drinking water system, the zone boundary of water contribution, and the associated potential contaminant sources located within this boundary. This assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. **The results should not be used as an absolute measure of risk and they should not be used to undermine public confidence in the water system.**

The Sunshine Precious Metals, Inc. drinking water system consists of one surface water intake. Testing of the Big Creek # 1 surface water intake indicates that the source is affected regularly by increased levels of turbidity, especially in the spring. Additionally, on occasion, lead has been detected in drinking water at levels exceeding the action level. This is most likely the result of slightly corrosive water leaching lead from pipes in the distribution system. Sunshine Precious Metals, Inc. has decided to address these problems by utilizing a different source of drinking water. They are currently in the process of connecting to Central Shoshone County Water District, who would provide water to the mine from the Enaville well. Once connected, Central Shoshone County Water District would be responsible for supplying Sunshine Precious Metals, Inc. with drinking water that meets Safe Drinking Water Act standards and providing corrosion control.

This assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what ranking a source receives, protection is always important. Whether the source is currently located in a “pristine” area or an area with numerous industrial and/or agricultural land uses, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

Sunshine Precious Metals, Inc. should maintain current practices intended to minimize the amount sediment entering the distribution system during times of high turbidity. They may also want to investigate the possibility of working with agencies that own land upstream from the intake to reduce turbidity levels in the watershed until the mine begins using water provided by Central Shoshone County Water District. After Sunshine Precious Metals, Inc. begins using water from the Enaville well they may want to form a partnership with Central Shoshone County Water District to develop long-term management strategies to counter any future contamination threats in the Enaville well watershed.

A community with a fully developed source water protection program will incorporate many strategies. For assistance in developing protection strategies please contact your regional IDEQ office or the Idaho Rural Water Association.

SOURCE WATER ASSESSMENT FOR SUNSHINE PRECIOUS METALS, INC.- BIG CREEK #1.

Section 1. Introduction- Basis for Assessment

The following sections contain information necessary to understand how and why this assessment was conducted. **It is important to review this information to understand what the ranking of this source means.** A map showing the delineated source water assessment area, a map showing the entire watershed contributing to the delineated area and the inventory of significant potential sources of contamination identified within the delineated area are attached.

Background

Under the Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency (EPA) to assess every source of public drinking water for its relative susceptibility to contaminants regulated by the Safe Drinking Water Act. This assessment is based on a land use inventory of the delineated assessment area and sensitivity factors associated with the intakes and watershed characteristics.

Level of Accuracy and Purpose of the Assessment

Since there are over 2,900 public water sources in Idaho, there is limited time and resources to accomplish the assessments. All assessments must be completed by May of 2003. An in-depth, site-specific investigation of each significant potential source of contamination is not possible. **Therefore, this assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. The results should not be used as an absolute measure of risk and they should not be used to undermine public confidence in the water system.**

The ultimate goal of the assessment is to provide data to local communities to develop a protection strategy for their drinking water supply system. The Idaho Department of Environmental Quality (IDEQ) recognizes that pollution prevention activities generally require less time and money to implement than treatment of a public water supply system once it has been contaminated. IDEQ encourages communities to balance resource protection with economic growth and development. The decision as to the amount and types of information necessary to develop a source water protection program should be determined by the local community based on its own needs and limitations. Source water protection is one facet of a comprehensive growth plan, and it can complement ongoing local planning efforts.

Section 2. Conducting the Assessment

General Description of the Source Water Quality

Sunshine Precious Metals, Inc. drinking water system serves a population of approximately 320 people. The drinking water intake is located east of Kellogg, Idaho, in the Big Creek drainage. (Figure 1). The public drinking water system is comprised of one surface water intake.

The primary water quality issues currently facing Sunshine Precious Metals, Inc. are those of turbidity and levels of lead above the action level in finished drinking water as a result of corrosive water leaching lead from distribution system pipes. Sunshine Precious Metals, Inc. has decided to connect to the Central Shoshone County Water District drinking water system to eliminate turbidity problems and gain the added benefit of a corrosion control program. Connection to Central Shoshone County Water District is expected to be completed soon.

Defining the Zones of Contribution- Delineation

To protect surface water systems from potential contaminants, the EPA required that the entire drainage basin be delineated upstream from the intake to the hydrologic boundary of the drainage basin (U.S. EPA, 1997b). The EPA recognized that an intake on a large water body could have an extensive drainage basin. Therefore, the EPA recommended that large drainage basins be segmented into smaller areas for the purpose of implementing a cost-effective potential contaminant inventory and susceptibility analysis. The delineation process established the physical area around an intake that became the focal point of the assessment. For small surface water systems like Sunshine Precious Metals, Inc., the process included mapping the boundaries of the zone of contribution along the watershed boundary only, with no further segmentation.

The delineated source water assessment area for Sunshine Precious Metals, Inc. can best be described as a shield-like shape extending from the intake upstream to the watershed boundaries on all sides. The actual data used by IDEQ in determining the source water assessment delineation area are available upon request.

Identifying Potential Sources of Contamination

A potential source of contamination is defined as any facility or activity that stores, uses, or produces, as a product or by-product, the contaminants regulated under the Safe Drinking Water Act and has a sufficient likelihood of releasing such contaminants at levels that could pose a concern relative to drinking water sources. The goal of the inventory process is to locate and describe those facilities, land uses, and environmental conditions that are potential sources of surface water contamination. The locations of potential sources of contamination within the delineation areas were obtained by field surveys conducted by IDEQ and from available databases.

The dominant land use outside Sunshine Precious Metals, Inc. is undeveloped, forested land. There is also a moderate density of mining activity in the area.

It is important to understand that a release may never occur from a potential source of contamination provided they are using best management practices. Many potential sources of contamination are regulated at the federal level, state level, or both to reduce the risk of release. Therefore, when a business, facility, or property is identified as a potential contaminant source, this should not be interpreted to mean that this business, facility, or property is in violation of any local, state, or federal environmental law or regulation. What it does mean is that the potential for contamination exists due to the nature of the business, industry, or operation. There are a number of methods that water systems can use to work cooperatively with potential sources of contamination. These involve educational visits and inspections of stored materials. Many owners of such facilities may not even be aware that they are located near a public water supply intake.

Contaminant Source Inventory Process

A two-phased contaminant inventory of the study area was conducted during 2000. The first phase involved identifying and documenting potential contaminant sources within the Sunshine Precious Metals, Inc. source water assessment area through the use of computer databases and Geographic Information System (GIS) maps developed by IDEQ. The second or enhanced phase of the contaminant inventory involved conducting an on-the-ground identification of potential sources and validation of sources identified in phase one. This task was undertaken with the assistance of Nancy Lucas.

A total of 19 potential contaminant sites are located within the delineated source water area (see Table 1). Most of the potential contaminant sources within delineated source water area are located on the east side of Big Creek, relatively close to the stream. Potential contaminant sources located in the delineated source water include mines and four sources identified by enhanced inventory, a gravel pit waste pile, road system and ski area.

Contaminants of concern are primarily related to the extensively used road system and recreation areas located upstream from the drinking water intake. Table 1 summarizes the potential contaminants of concern and information source.

Figure 1. Sunshine Precious Metals, Inc. Delineation Location and Potential Contaminant Inventory

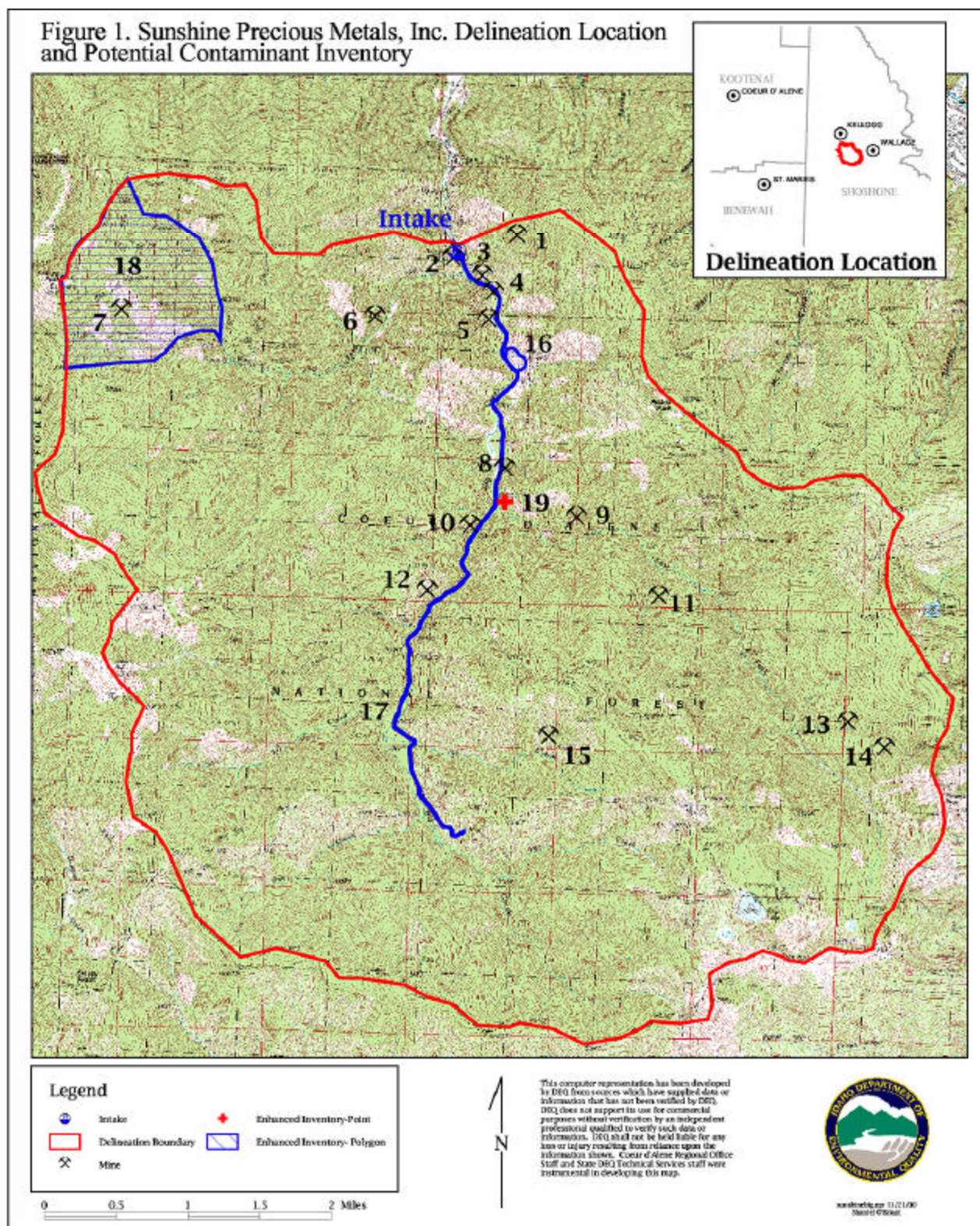


Table 1. Sunshine Precious Metals, Inc.- Big Creek #1 Potential Contaminant Inventory

SITE #	Source Description	Source of Information	Potential Contaminants
1	Mine- Silver	Database Search	IOC
2	Mine- Silver	Database Search	IOC
3	Mine- Silver	Database Search	IOC
4	Mine- Silver	Database Search	IOC
5	Mine- Silver	Database Search	IOC
6	Mine- Silver	Database Search	IOC
7	Mine- Silver	Database Search	IOC
8	Mine- Silver	Database Search	IOC
9	Mine- Silver	Database Search	IOC
10	Mine- Silver	Database Search	IOC
11	Mine- Gold	Database Search	IOC
12	Mine- Silver	Database Search	IOC
13	Mine- Silver	Database Search	IOC
14	Mine- Silver	Database Search	IOC
15	Mine- Silver	Database Search	IOC
16	Gravel Pit	Enhanced Inventory	VOC, SOC, IOC, Sediment
17	Road System	Enhanced Inventory	VOC, SOC, IOC, Sediment
18	Ski Area	Enhanced Inventory	VOC, SOC, IOC, Sediment
19	Waste Pile	Enhanced Inventory	VOC, SOC, IOC, Microbial, Sediment

IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

Section 3. Susceptibility Analysis

Significant potential sources of contamination were ranked as high, moderate, or low risk according to the following considerations: hydrologic characteristics, physical integrity and construction of the intake, land use characteristics, and potentially significant contaminant sources. The susceptibility rankings are specific to a particular potential contaminant or category of contaminants. Therefore, a high susceptibility rating relative to one potential contaminant does not mean that the water system is at the same risk for all other potential contaminants. The relative ranking that is derived for each intake is a qualitative, screening-level step that, in many cases, uses generalized assumptions and best professional judgement. The following summaries describe the rationale for the susceptibility ranking.

Intake Construction

The construction of the Sunshine Precious Metals, Inc.- Big Creek #1 public water system intake directly affects the ability of the intake to protect the source from contaminants. The Sunshine Precious Metals, Inc. drinking water system consists of one intake that produces surface water for domestic and industrial uses. The intake system construction score was low as a result of a properly constructed intake that is protected from potential contaminant sources with the added benefit of being located in an infiltration gallery.

The Big Creek #1 intake is located approximately 1/2 mile downstream from the Central Shoshone County Water District intake on Big Creek in Shoshone County, Idaho.

Potential Contaminant Source and Land Use

The intake rated in the high category for volatile organic chemicals, synthetic organic chemicals and inorganic chemicals because of the proximity of a heavily used road to the intake.

In terms of the total susceptibility score, it can be seen from Table 2 that the intake showed a low susceptibility for microbial contamination.

Table 2. Summary of Sunshine Precious Metals, Inc.- Big Creek #1 Susceptibility Evaluation

Intake	Contaminant Inventory				System Construction	Final Susceptibility Ranking			
	IOC	VOC	SOC	Microbials		IOC	VOC	SOC	Microbials
Big Creek #1	H*	H*	H*	L	L	H*	H*	H*	L

H = High Susceptibility, M = Moderate Susceptibility, Low Susceptibility

IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

H* - Indicates source automatically scored as highly susceptible because of its close proximity to a significant contaminant source

Susceptibility Summary

The Sunshine Precious Metals, Inc. drinking water system is currently threatened by inorganic, synthetic organic and volatile organic chemicals related to the road system in the watershed above the drinking water intake and by high levels of turbidity related to storm water runoff.

Section 4. Options for Source Water Protection

The susceptibility assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what the susceptibility ranking a source receives, protection is always important. Whether the source is currently located in a “pristine” area or an area with numerous industrial and/or agricultural land uses that require education and surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

An effective source water protection program is tailored to the particular local source water protection area. A community with a fully developed source water protection program will incorporate many strategies. Because Sunshine Precious Metals will be connecting to the Central Shoshone County drinking water system in the near future, they should focus source water protection activities on forming a partnership with Central Shoshone County Water District to implement protection activities for the Enaville well watershed.

Assistance

Public water supplies and others may call the following IDEQ offices with questions about this assessment and to request assistance with developing and implementing a local protection plan. In addition, draft protection plans may be submitted to the IDEQ office for preliminary review and comments.

Coeur d'Alene Regional IDEQ Office

(208) 769-1422

State IDEQ Office

(208) 373-0502

Website: <http://www.deq.state.id.us>

Attachment A

Sunshine Precious Metals – Big Creek #1 Susceptibility Analysis Worksheet

The final scores for the susceptibility analysis were determined from the addition of the Potential Contaminant Source/Land Use Score and Source Construction Score.

Final Susceptibility Scoring:

0 - 7 Low Susceptibility

8 - 15 Moderate Susceptibility

> 16 High Susceptibility

Surface Water Susceptibility Report

Public Water System Name : SUNSHINE PRECIOUS METALS INC

Intake : BIG CREEK #1

Public Water System Number 1400050

11/21/00 2:36:02 PM

1. System Construction

SCORE

Intake structure properly constructed	YES	0
Infiltration gallery or well under the direct influence of Surface Water	YES	2

Total System Construction Score 0

2. Potential Contaminant Source / Land Use

IOC
ScoreVOC
ScoreSOC
ScoreMicrobial
Score

Predominant land use type (land use or cover)	BASALT FLOW, UNDEVELOPED, OTHER	0	0	0	0
---	---------------------------------	---	---	---	---

Farm chemical use high	NO	0	0	0	
------------------------	----	---	---	---	--

Significant contaminant sources *	YES	Heavily used road			
-----------------------------------	-----	-------------------	--	--	--

Sources of class II or III contaminants or microbials present within the 500' of the intake and the		1	1	1	0
---	--	---	---	---	---

Agricultural lands within 500 feet	NO	0	0	0	0
------------------------------------	----	---	---	---	---

Three or more contaminant sources	YES	1	1	1	1
-----------------------------------	-----	---	---	---	---

Sources of turbidity in the watershed	YES	1	1	1	1
---------------------------------------	-----	---	---	---	---

Total Potential Contaminant Source / Land Use Score 4 4 4 2

3. Final Susceptibility Source Score

4 4 4 2

4. Final Source Ranking

High* High* High* Low

* Special consideration due to significant contaminant sources

POTENTIAL CONTAMINANT INVENTORY

LIST OF ACRONYMS AND DEFINITIONS

AST (Aboveground Storage Tanks) – Sites with aboveground storage tanks.

Business Mailing List – This list contains potential contaminant sites identified through a yellow pages database search of standard industry codes (SIC).

CERCLIS – This includes sites considered for listing under the **Comprehensive Environmental Response Compensation and Liability Act (CERCLA)**. CERCLA, more commonly known as **ASuperfund** is designed to clean up hazardous waste sites that are on the national priority list (NPL).

Cyanide Site – DEQ permitted and known historical sites/facilities using cyanide.

Dairy – Sites included in the primary contaminant source inventory represent those facilities regulated by Idaho State Department of Agriculture (ISDA) and may range from a few head to several thousand head of milking cows.

Deep Injection Well – Injection wells regulated under the Idaho Department of Water Resources generally for the disposal of stormwater runoff or agricultural field drainage.

Enhanced Inventory – Enhanced inventory locations are potential contaminant source sites added by the water system. These can include new sites not captured during the primary contaminant inventory, or corrected locations for sites not properly located during the primary contaminant inventory. Enhanced inventory sites can also include miscellaneous sites added by the Idaho Department of Environmental Quality (DEQ) during the primary contaminant inventory.

Floodplain – This is a coverage of the 100year floodplains.

Group 1 Sites – These are sites that show elevated levels of contaminants and are not within the priority one areas.

Inorganic Priority Area – Priority one areas where greater than 25% of the wells/springs show constituents higher than primary standards or other health standards.

Landfill – Areas of open and closed municipal and non-municipal landfills.

LUST (Leaking Underground Storage Tank) – Potential contaminant source sites associated with leaking underground storage tanks as regulated under RCRA.

Mines and Quarries – Mines and quarries permitted through the Idaho Department of Lands.)

Nitrate Priority Area – Area where greater than 25% of wells/springs show nitrate values above 5mg/l.

NPDES (National Pollutant Discharge Elimination System) – Sites with NPDES permits. The Clean Water Act requires that any discharge of a pollutant to waters of the United States from a point source must be authorized by an NPDES permit.

Organic Priority Areas – These are any areas where greater than 25 % of wells/springs show levels greater than 1% of the primary standard or other health standards.

Recharge Point – This includes active, proposed, and possible recharge sites on the Snake River Plain.

RICRIS – Site regulated under **Resource Conservation Recovery Act (RCRA)**. RCRA is commonly associated with the cradle to grave management approach for generation, storage, and disposal of hazardous wastes.

SARA Tier II (Superfund Amendments and Reauthorization Act Tier II Facilities) – These sites store certain types and amounts of hazardous materials and must be identified under the Community Right to Know Act.

Toxic Release Inventory (TRI) – The toxic release inventory list was developed as part of the Emergency Planning and Community Right to Know (Community Right to Know) Act passed in 1986. The Community Right to Know Act requires the reporting of any release of a chemical found on the TRI list.

UST (Underground Storage Tank) – Potential contaminant source sites associated with underground storage tanks regulated as regulated under RCRA.

Wastewater Land Applications Sites – These are areas where the land application of municipal or industrial wastewater is permitted by DEQ.

Wellheads – These are drinking water well locations regulated under the Safe Drinking Water Act. They are not treated as potential contaminant sources.

NOTE: Many of the potential contaminant sources were located using a geocoding program where mailing addresses are used to locate a facility. Field verification of potential contaminant sources is an important element of an enhanced inventory.

Where possible, a list of potential contaminant sites unable to be located with geocoding will be provided to water systems to determine if the potential contaminant sources are located within the source water assessment area.